## AMENDMENTS TO THE CLAIMS

1-37 (Cancelled).

38 (New).      A coding mode determining apparatus for determining at least one of a plurality of candidate coding modes of an image block, comprising:

a simple motion estimation portion that derives a coding cost of each of the coding modes, based on a simple motion estimation for small blocks, which are partitions of an image block that are obtained with each of the coding modes;

a coding mode selecting portion that selects a subset of the plurality of the coding modes, based on the coding costs derived by the simple motion estimation portion;

a complex motion estimation portion that derives a coding cost of each of the coding modes, based on a complex motion estimation for the small blocks obtained with at least a subset of said subset of coding modes; and

a coding mode determining portion that determines a coding mode of the image block, based on the coding costs derived by the complex motion estimation portion.

39 (New).      The coding mode determining apparatus according to claim 38,

wherein, when deriving a coding cost of each of the coding modes, the simple motion estimation portion performs a simple motion estimation in a plurality of picture reference directions on each of the small blocks obtained with each of the coding modes to calculate a coding cost, then selects a picture reference direction having the lowest coding cost for each individual small block, then sums up the coding costs of all of the small blocks relating to the selected picture reference directions for each of candidate division methods individually to derive a coding cost of the coding mode of each of the candidate division methods.

40 (New).      The coding mode determining apparatus according to claim 39,

wherein, when deriving a coding cost of each of the coding modes, the simple motion estimation portion performs a simple motion estimation in a plurality of picture reference directions on each of the small blocks obtained with each of the coding modes to calculate a coding cost, then converts the coding cost of each of the small blocks for

each picture reference direction individually into a coding cost per image block to derive a coding cost of the coding mode of each of candidate division methods for each of the reference directions.

41 (New). The coding mode determining apparatus according to claim 39,
wherein the simple motion estimation in a plurality of picture reference directions in the simple motion estimation portion includes only forward prediction in which a temporally preceding picture is referenced, and backward prediction in which a temporally following picture is referenced.

42 (New). The coding mode determining apparatus according to claim 40,
wherein the simple motion estimation in a plurality of picture reference directions in the simple motion estimation portion includes only forward prediction in which a temporally preceding picture is referenced, and backward prediction in which a temporally following picture is referenced.

43 (New). The coding mode determining apparatus according to claim 39,
wherein the simple motion estimation in a plurality of picture reference directions in the simple motion estimation portion includes forward prediction in which a temporally preceding picture is referenced, backward prediction in which a temporally following picture is referenced, and bi-directional prediction in which pictures that are on both sides in time are referenced

44 (New). The coding mode determining apparatus according to claim 40,
wherein the simple motion estimation in a plurality of picture reference directions in the simple motion estimation portion includes forward prediction in which a temporally preceding picture is referenced, backward prediction in which a temporally following picture is referenced, and bi-directional prediction in which pictures that are on both sides in time are referenced

45 (New).    The coding mode determining apparatus according to claim 39,

wherein the simple motion estimation in a plurality of picture reference directions in the simple motion estimation portion includes forward prediction in which a temporally preceding picture is referenced, and backward prediction in which a temporally following picture is referenced, and

wherein the simple motion estimation portion derives a coding cost where bi-directional prediction in which pictures that are on both sides in time are referenced is performed, based on the forward prediction and the backward prediction.

46 (New).    The coding mode determining apparatus according to claim 40,

wherein the simple motion estimation in a plurality of picture reference directions in the simple motion estimation portion includes forward prediction in which a temporally preceding picture is referenced, and backward prediction in which a temporally following picture is referenced, and

wherein the simple motion estimation portion derives a coding cost where bi-directional prediction in which pictures that are on both sides in time are referenced is performed, based on the forward prediction and the backward prediction.

47 (New).    The coding mode determining apparatus according to claim 38,

wherein the complex motion estimation portion determines a picture reference direction in the complex motion estimation, based on the simple motion estimation in the simple motion estimation portion.

48 (New).    The coding mode determining apparatus according to claim 44,

wherein, as a result of the simple motion estimation for the small blocks in the simple motion estimation portion, the complex motion estimation portion selects both the forward prediction and the backward prediction when their coding costs are substantially the same, and selects one of the prediction that has the smaller coding cost when their coding costs are different.

49 (New).    The coding mode determining apparatus according to claim 38,

wherein the complex motion estimation portion selects at least a further subset of said subset of coding modes, based on the simple motion estimation for the small blocks in the simple motion estimation portion.

50 (New).     The coding mode determining apparatus according to claim 46,

wherein the complex motion estimation portion selects each of the coding modes in ascending order of their coding costs, and terminates the selection immediately before the sum of the coding costs of the selected coding modes exceeds a margin for the processing amount.

51 (New).     The coding mode determining apparatus according to claim 38,

wherein the simple motion estimation portion or the complex motion estimation portion changes a method of motion estimation in the simple motion estimation or the complex motion estimation in such a manner that a processing amount for the motion estimation process is maintained substantially constant.

52 (New).     The coding mode determining apparatus according to claim 38,

wherein the simple motion estimation is motion estimation with integer pixel accuracy, and

wherein the complex motion estimation is motion estimation with non-integer pixel accuracy.

53 (New).     An integrated circuit comprising the coding mode determining apparatus according to claim 38.

54 (New).     An image coding apparatus comprising:

the coding mode determining apparatus according to claim 38; and

a coding apparatus that codes an image block, based on a coding mode of the image block that is determined by the coding mode determining apparatus.

55 (New).    An integrated circuit comprising the image coding apparatus according to claim 51.

56 (New).    A coding mode determining apparatus for determining a coding mode of an image block, comprising:

an inter prediction portion that performs inter prediction on each block of field structure blocks and frame structure blocks of the image block to derive a coding cost;

a coding picture structure determining portion that determines a coding picture structure of the image block, based on the coding costs obtained by the inter prediction portion;

an intra prediction portion that performs intra prediction on each of the blocks having the determined coding picture structure to derive a coding cost; and

a coding prediction method determining portion that determines a coding prediction method for each of the blocks of the image block that have the determined coding picture structure by comparing the coding costs obtained with the inter prediction and the coding costs obtained with the intra prediction.

57 (New).    The coding mode determining apparatus according to claim 53,

wherein the inter prediction portion sums up the respective coding costs of the blocks of the frame structure blocks to derive a coding cost of the frame structure blocks, and sums up the respective coding costs of the blocks of the field structure blocks to derive a coding cost of the field structure blocks.

58 (New).    The coding mode determining apparatus according to claim 55,

wherein the intra prediction portion performs intra prediction on each of the blocks having the determined coding picture structure to derive a coding cost, and

wherein the coding prediction method determining portion compares the coding costs derived in the inter prediction portion and the coding costs derived in the intra prediction portion for each of the blocks having the determined coding picture structure to determine a coding prediction method for each of the blocks..

59 (New).     The coding mode determining apparatus according to claim 53,
        wherein the image block is a block pair consisting of two square blocks.

60 (New).     An integrated circuit comprising the coding mode determining apparatus
according to claim 53.

61 (New).     An image coding apparatus comprising:
        the coding mode determining apparatus according to claim 53; and
        a coding apparatus that codes an image block based on a coding mode of the
image block that is determined by the coding mode determining apparatus.

62 (New).     An integrated circuit comprising the image coding apparatus according to
claim 58.

63 (New).     A coding mode determining apparatus for determining a coding mode of
an image block, comprising:
        a simple motion estimation portion that performs a simple motion estimation for
each block of field structure blocks and frame structure blocks of the image block to
derive a coding cost; and
        a coding picture structure determining portion that determines a coding picture
structure by comparing the coding costs of the field structure blocks and the frame
structure blocks of the image block, based on the coding costs obtained by the simple
motion estimation portion.

64 (New).     The coding mode determining apparatus according to claim 60,
        wherein the simple motion estimation portion performs simple inter prediction
and simple intra prediction on each of the blocks, then selects one of the simple inter
prediction and the simple intra prediction for each of the blocks by comparing the coding
costs of the simple inter prediction and the coding costs of the simple intra prediction,
and further sums up the respective coding costs of the blocks for each of the picture

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structures to derive a coding cost of the frame structure blocks and a coding cost of the field structure blocks.

65 (New).     The coding mode determining apparatus according to claim 61,
        wherein the simple inter prediction is inter prediction with integer pixel accuracy.

66 (New).     The coding mode determining apparatus according to claim 60,
        wherein the image block is a block pair consisting of two square blocks.

67 (New).     An integrated circuit comprising the coding mode determining apparatus according to claim 60.

68 (New).     An image coding apparatus comprising:
        the coding mode determining apparatus according to claim 60;
        a complex motion estimation portion that performs a complex motion estimation for an image block having a coding picture structure determined by the coding mode determining apparatus; and
        a coding portion that codes the image block based on a prediction result obtained by the complex motion estimation portion.

69 (New).     The image coding apparatus according to claim 65,
        wherein the complex motion estimation portion performs complex inter prediction or complex intra prediction on each block having the determined coding picture structure.

70 (New).     The image coding apparatus according to claim 66,
        wherein the complex inter prediction is inter prediction with non-integer pixel accuracy.

71 (New).     An integrated circuit comprising the image coding apparatus according to claim 65.

72 (New).    A coding mode determining method for determining at least one of a plurality of candidate coding modes of an image block, comprising:

a simple motion estimation step of deriving a coding cost of each of the coding modes, based on a simple motion estimation for small blocks, which are partitions of an image block that are obtained with each of the coding modes;

a coding mode selecting step of selecting a subset of the plurality of the coding modes, based on the coding costs derived by the simple motion estimation step;

a complex motion estimation step of deriving a coding cost of each of the coding modes, based on a complex motion estimation for the small blocks obtained with at least a subset of said subset of coding modes; and

a coding mode determining step of determining a coding mode of the image block, based on the coding costs derived by the complex motion estimation step.


73 (New).    A coding mode determining method for determining a coding mode of an image block, comprising:

an inter prediction step of performing inter prediction on each block of field structure blocks and frame structure blocks of the image block to derive a coding cost;

a coding picture structure determining step of determining a coding picture structure of the image block based on the coding costs obtained by the inter prediction step;

an intra prediction step of performing intra prediction on each of the blocks having the determined coding picture structure to derive a coding cost; and

a coding prediction method determining step of determining a coding prediction method for each of the blocks of the image block that have the determined coding picture structure by comparing the coding costs obtained with the inter prediction and the coding costs obtained with the intra prediction.


74 (New).    A coding mode determining method for determining a coding mode of an image block, comprising:

a simple motion estimation step of performing a simple motion estimation for each block of field structure blocks and frame structure blocks of the image block to derive a coding cost; and

a coding picture structure determining step of determining a coding picture structure by comparing the coding costs of the field structure blocks and the frame structure blocks of the image block, based on the coding costs obtained by the simple motion estimation step.

75 (New).  A coding mode determining program for determining, with a computer, at least one of a plurality of candidate coding modes of an image block,

wherein the coding mode determining program lets the computer perform a coding mode determining method comprising:

a simple motion estimation step of deriving a coding cost of each of the coding modes, based on a simple motion estimation for small blocks, which are partitions of an image block that are obtained with each of the coding modes;

a coding mode selecting step of selecting a subset of the plurality of the coding modes, based on the coding costs derived by the simple motion estimation step;

a complex motion estimation step of deriving a coding cost of each of the coding modes, based on a complex motion estimation for the small blocks obtained with at least a subset of said subset of coding modes; and

a coding mode determining step of determining a coding mode of the image block, based on the coding costs derived by the complex motion estimation step.

76 (New).  A coding mode determining program for determining, with a computer, a coding mode of an image block,

wherein the coding mode determining program lets the computer perform a coding mode determining method comprising:

an inter prediction step of performing inter prediction on each block of field structure blocks and frame structure blocks of the image block to derive a coding cost;

a coding picture structure determining step of determining a coding picture structure of the image block based on the coding costs obtained by the inter prediction step;

an intra prediction step of performing intra prediction on each of the blocks having the determined coding picture structure to derive a coding cost; and

a coding prediction method determining step of determining a coding prediction method for each of the blocks of the image block that have the determined coding picture structure by comparing the coding costs obtained with the inter prediction and the coding costs obtained with the intra prediction.

77 (New). A coding mode determining program for determining, with a computer, a coding mode of an image block,

wherein the coding mode determining program lets the computer perform a coding mode determining method comprising:

a simple motion estimation step of performing a simple motion estimation for each block of field structure blocks and frame structure blocks of the image block to derive a coding cost; and

a coding picture structure determining step of determining a coding picture structure by comparing the coding costs of the field structure blocks and the frame structure blocks of the image block, based on the coding costs obtained by the simple motion estimation step.